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1950 PLANS OF THE ACADEMY OF SCIENCES USSR

President's Address

Vavilov further stated that the past year has been a notable one; programs aimed at a rapid completion of the postwar Five-Year Plan have received an important stimulus; and great strides have been made in industry and agriculture. The international stature of the Soviet Union has also increased. Today, hand in hand with the nations of the people's democracies, the Soviet Union is reaching for new goals. Much historical significance will be attached to the successes of the People's Democracy in China. The working peoples of the world are more and more uniting their efforts toward a peaceful world. Under these conditions, science and knowledge have advanced more than at any other time. Science is growing both in quality and in quantity. Moreover, the party, the state and all nationals of the USSR? are making greater demands on science. There is no hesitation about saying that the achievements in science have permitted the rapid advance of Soviet countries to a state of ideal Communism. For that reason the work plan of the Academy of Sciences is constantly widening its limits. The final draft of the academy's work plan covers 150 printed pages.

- 1 -

SECRET

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According to Vavilov, in 1949, the academy strove for greater cooperation between scientific factions and industrial technology and requirements. This aspect of the academy's work is reflected in that section of the 1950 plan which calls for a greatly intensified program for the introduction of completed scientific projects into industrial practice. In its work plans, the aim of the Academy of Sciences is to free itself from those faulty conceptions, the nature of which we will not discuss at this time, but which in previous years have been widely disseminated within scientific circles to the detriment of Soviet science in general. Moreover, projects purely of an incidental nature, which have no immediate practical or theoretical value, will not be supported by the academy.

Vavilov stressed the fact that 1950 is the final year for the postwar Five-Year Plan. The Academy of Sciences also has its five-year plan which was used as a basis for drawing up the 1950 work plan. At this meeting the aims of the Academy of Sciences in the field of scientific development as well as in matters pertaining to the training of young scientists will be discussed.

Vavilov revealed that the publishing activities of the Academy of Sciences are constantly growing, and today the academy has become the largest publisher in the USSR. The state, therefore, expects the academy publishers to present material whose quality will be unexcelled. In addition to articles and other publications of a highly technical nature, the Academy of Sciences also publishes numerous articles on a popular-science level.

Vavilov warned that another important function of the academy, which is growing in importance, is the part it plays in coordinating the scientific endeavor of the Soviet Union through its many meetings, bulletins, etc.

President Vavilov concluded by stating that Soviet science has been assigned an important duty by Stalin, and it will be up to Soviet scientists in general and members of the Academy of Sciences in particular to achieve that goal at the end of the first postwar Five-Year Plan.

Morning Session

The meeting was called to order by President S. I. Vavilov, who stated that the delegates were assembled primarily to hear and approve the 1950 work plans of the Academy of Sciences.

Academician A. V. Topchiyev followed with his speech "Plan for Scientific Research Work of the Academy of Sciences USSR and Plan for Training of Scientific Personnel." *Vestnik Akademii Nauk, SSSR*, No 2, 1950

50X1-HUM

The next speech was given by Academician Ye. A. Chudakov, member of the Presidium, Academy of Sciences USSR, on the "Plan of the Academy of Sciences USSR on the Introduction of Completed Scientific-Research Projects Into Industrial Practice." (Appended)

Various members of the General Assembly then submitted their comments and views on the above-mentioned reports.

Academician I. G. Petrovskiy, Academician Secretary of the Department of Physicomathematical Sciences, reported that the institutes of his department were all completing their 1949 plans as per schedule. In the Physics Institute, research is being concluded on optical phenomena in a media that is simultaneously luminescent and absorbent. At the Leningrad Physicotechnical Institute, new methods have been devised (ultracentrifuge) which permit studies of the properties of synthetic proteins. Members of the Institute of Crystallography are completing research, conducted for a number of years, on the structure of tourmaline and have achieved great success with respect to the adoption by industry of synthetic corundum. The Geophysics Institute has continued operating several large expeditions

- 2 -

SECRET

SECRET

SECRET

SECRET

50X1-HUM

(Ashkhabad, Garm, Northern Tien Shan). At the Mathematics Institute, new and interesting results have been achieved in the field of the theory of numbers, topology, and the theory of probability. At the Central Astronomical Observatory, work was completed on the installation of the first Soviet meniscus photoheliograph at the Vysokogornaya Stantsiya (High Mountain Station) and continuous photography of the sun has been initiated. At the Crimean Astrophysics Observatory, some important data was obtained on the spectra of carbon stars. A new type of electron-optic apparatus was developed which permitted studies of the structure of the galactic centers. Some valuable information was brought back by the Sikhote-Alin Meteorite Expedition.

In his presentation of the 1950 plan, Petrovskiy discussed those projects which had not been included in the 1949 plans. In the field of mathematics, the 1950 plan called for solution of important theoretical problems on topology and the theory of numbers, the mathematics of elementary particles as applied to problems of the theoretically probable systems of physical processes, and quasi-conformal representations necessary for those conducting research in the field of mechanics.

According to Petrovskiy, the physics institutes of the department, in addition to solving various basic problems in their fields (theory of the structure of the atom, studies of the nature and composition of cosmic rays, luminescence and semiconductors), will also strive to achieve a 100% complete record with respect to the introduction into industrial practice of projects previously completed. Among them are daylight lamp bulbs, piezoelectric elements from barium titanate, the use of "eleggaz" as an insulating material in high-tension cables, a new type of photoresistance for use in the film industry, and a method for direct production of thin sheets of aluminum from melts, etc. The Institute of Crystallography has developed a new light, yet strong, material for use in industry.

The Geophysics Institute, he said, is studying the nature of the hard envelope of the earth for a key to a solution of the problem of forecasting earthquakes. A new project has been undertaken by this institute in its 1950 plan; it will study the physics of clouds and precipitation. In the field of astronomy, special provisions have been made for the reconstruction of the Central Astronomical Observatory at Pulkovo and the Crimean Astrophysics Observatory.

The plan for this department, Petrovskiy added, also has provisions for the solution of methodological problems and problems on the history of science and research as they relate to the reconstruction of Moscow.

Academician V. S. Nemchinov, acting chairman of the Council for the Study of the Productive Forces of the USSR, Academy of Sciences USSR, stated that in determining the 1950 work plan for the council, great care was taken to have the elements of the plan comply with the provisions of the 30 June 1949 resolution of the Presidium, Academy of Sciences USSR. He stressed the fact that the general level of the work of the council depends on the scientists and technicians who are assigned to any one problem.

Nemchinov discussed those provisions of the 1950 plan which were instituted as a result of the requirements and resolutions of Gosplan SSSR, and the Presidium, Academy of Sciences USSR. One of the first projects will be a review of the studies conducted to determine the role of the Pechora, Karaganda, Kuznetz, and Ural coking and other types of coal in the economy of the Urals. The council has also scheduled work leading to a technical and economic evaluation of the Ayat deposits and a determination of their contribution to the economic status of the Urals. In November 1950, the council will convene a special meeting to discuss problems pertaining to the Urals and will also expand its work on the Far East and in Kazakhstan. There also appears to be a need for some complex i.e., participation by all concerned parties/ meetings on individual problems on the development of the productive power of the USSR, for example a conference on cement, clays, etc.

- 3 -

SECRET

SECRET

SECRET

SECRET

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Nemchinov also indicated that 1950 would be a banner year for the council, not only with respect to its compliance with resolutions of the Presidium, Academy of Sciences USSR, but also in view of the fact that five out of seven complex expeditions will conclude operations by mid-1950.

Academician A. A. Mikulin, discussing problems relative to the introduction of completed projects into industrial practice gratefully acknowledged the contributions afforded by the Stalin regime. He stated that the slow tempo for the introduction of completed projects is not due to a lack of liaison between scientific institutes of the academy and the ministries, but rather due to a lack of liaison between individuals in institutes of the academy and the ministries. In line with this, Academician Mikulin recommended the organization of a special bureau within the Presidium, Academy of Sciences USSR, which would be responsible for contacting the proper authorities to provide for the introduction of completed projects into industrial practice.

Academician D. S. Belyankin, Academician Secretary of the Department of Geological and Geographical Sciences, stated that in his estimation the 1950 plan provided for elimination of multiplicity of research subjects and tended toward greater consolidation of the various research projects. The plan for the Institute of Geological Sciences (the major institute of the department) included research on iron, nonferrous metals (location of their deposits and their utilization), coal, petroleum, rare elements, etc. The Soils Institute, which for a long time has been suffering as a result of some undesirable conditions, in accordance with resolutions of the Presidium has finally improved its performance. In 1950, this institute will study problems in the transformation of nature and the planting of shelter belts. Most of the other institutes of the department will continue the work they had been carrying out in 1949.

Academician Belyankin discussed briefly the achievements of the Department of Geological and Geographical Sciences in 1949. The program of the Institute of Geological Sciences was completely revamped in that year, and greater emphasis was placed on the state requirement for expansion of the mineral and raw material bases. In line with this revamping of the work program, the institute organized several large expeditions: into the northern Urals, central and eastern Siberia, the region of the Russian plain, etc. Some of the data already obtained may lead to the mining of a lead ore in certain parts of central Asia. New data has also been obtained on the mineralogy and petrography of the Kola Peninsula.

The Laboratory of the Physicomechanical Properties of Rocks, according to Belyankin has determined the possibility of utilizing Moscow limestone of the Lower Carboniferous strata as a facing stone for high Moscow buildings.

During the field-work season, he stated, the Geography Institute sent out a total of five expeditions, which had as their purpose geographical and geomorphological studies relevant to the state shelter-belt planting program and the plan for expanding tea cultivation.

Of the many projects assigned the Soils Institute, Academician Belyankin mentioned only the project "Studies of the Baradinsk Depression for Purposes of Melioration." The work will include cartography as well as a certain amount of laboratory research. The Institute of Permafrost Studies has completed a project which has resulted in the laying of gas pipelines at a depth less than that heretofore accepted. The Oceanological Institute is compiling a report based on data obtained by a complex oceanological expedition; this report may lead to a description of colonies of marine life at great depths. The Laboratory of Hydrogeological Problems imeni F. P. Savarenskiy discussed mineral springs and submitted a program for intensified surveying for new mineral springs.

- 4 -

SECRET

SECRET

SECRET

SECRET

50X1-HUM

In his report, Academician G. F. Aleksandrov, Director of the Institute of Philosophy, stated that the 1950 plan calls for intensified development of the theory of Soviet socialism.

Academician B. A. Vvedenskiy, Academician Secretary of the Department of Technical Sciences, gave an analysis of the findings of ministries and other scientific institutes which examined the 1950 work plan of his department.

Academician Ye. N. Pavlovskiy, Director of the Zoological Institute, in his report stressed the need for rapid adoption of new research methods. Pavlovskiy appealed to the Presidium, Academy of Sciences, to take the necessary steps to provide sufficient financial aid for the various expeditions which the institute has scheduled. This is particularly important, he urged, in the case of expeditions which are of a strictly seasonal nature and whose success depends on prompt dispatch.

Academician A. Ye. Arbuzov deplored the fact that many of the scientists are not familiar with industrial technology, thus creating a situation where completed scientific projects are not suited for rapid adoption by industry. Arbuzov suggests the organization of a special group charged with the duty of maintaining close liaison between scientist and industrialist.

As its last act for the morning, the General Assembly approved the preliminary draft for scientific research work of the academy, the plan for the training of scientific personnel, and the plan for the introduction of completed projects into industrial practice. The morning session was adjourned by Academician S. I. Vavilov who stated that the 1950 plan still had some elements which need clarification.

Evening Session

The highlight of the evening session was a discussion of the 1950 plan for publishing work to be done by the Academy of Sciences USSR. Academician I. P. Bardin, Vice-President of the Academy of Sciences USSR, submitted the report on the proposed plan for Academician V. P. Volgin, Deputy Chairman of the Editorial-Publishing Council, Academy of Sciences USSR. The report stated that in 1950 the publishing activities would be increased commensurate to the general increase of scientific research now taking place in the institutes of the Academy of Sciences. The 1950 plan calls for the printing of 15,350 manuscript pages, of which the greatest number are in the field of social sciences. Of the 15,350 manuscript pages, 11,641 pages will be printed into books representing 635 titles. The Department of Biological Sciences submitted 1,859 manuscript pages, while the Department of Technical Sciences and the Department of Geological and Geographical Sciences each submitted approximately 700 manuscript pages. The Department of Chemical Sciences is credited with 500 manuscript pages while the Department of Physicomathematical Sciences has submitted 562 manuscript pages. The Commission of Popular-Science Literature has submitted 867 manuscript pages for publication.

Bardin reported that several multivolume sets are also scheduled for publication according to the 1950 work plan. There are provisions for the publishing of Volumes II and III of a ten-volume set on M. V. Lomonosov's works, as well as the first six volumes of a 24-volume set on I. P. Pavlov's works. In addition, multivolume sets will be published on the works of V. V. Dokuchayev, A. N. Krylov, V. I. Komarov, P. L. Chebyshev, L. I. Mandel'shtam, T. D. Lysenko, N. G. Chebotarev, A. A. Baykov and others. Preparations will also be made for the publication in the near future, of volumes on the works of I. M. Gubkin, D. N. Pryanishnikov, P. N. Yablochko, and others. A two-volume set of the complete works of Darwin is scheduled for completion in 1950.

Among the more important works to be published in 1950, according to Bardin, are: Research on the Problems of the Microstructure of Light, containing work by Academician S. I. Vavilov, History of Rocks (Volume I) by A. Ye. Fersman;

- 5 -

SECRET

SECRET

SECRET

SECRET

50X1-HUM

Introduction to Petrochemistry by A. N. Zavaritskiy, Trematoda in Man and Animals by K. I. Skryabin, and selected works of Academicians A. N. Bakh, P. P. Shorygin, and S. N. Bernshteyn. In all, there will be a total of 50 titles by famous Soviet scientists.

Bardin stated that there are some serious defects in the operations of the publishing functions of the Academy of Sciences which need immediate attention. For example, he said, there have been numerous cases of an excessive time lag between the submission of manuscripts and their actual publication. In addition, there have been several cases where books have been published without sufficient editing with the result that there are numerous errors. Many of these errors are typographical but, more serious, many of the errors are of an ideological nature.

This report was discussed by Academicians S. I. Vol'fkovich, Ye. N. Pavlovskiy, V. V. Shuleykin, Corresponding Members of the Academy of Sciences A. M. Yegolin, K. A. Pazhitnov, A. M. Pankratova, K. V. Ostrovityanov, A. D. Udal'tsiv, and A. I. Nazarov, Director of the Publishers, Academy of Sciences USSR.

The commentators were unanimous in their opinion that the work of the publishing activity of the Academy of Sciences had improved greatly over the past year. A. I. Nazarov stated that the aid rendered by the state to the Publishers, Academy of Sciences USSR, was instrumental in placing the publishing activity of the academy in the position of the foremost publishers of scientific literature in the Soviet Union.

Some comment was also made regarding the relatively low circulation and high prices of scientific books, particularly of popular-science literature, since the purpose of popular-science literature can be accomplished only by the widest possible circulation at the lowest possible cost. President Vavilov stated that this undesirable aspect of popular-science literature would be eliminated in 1950 by the initiation of new polygraphical technology, such as photography, which will permit the publishing of greater numbers of issues without appreciable increase of publishing cost, thus eventually leading to a decrease in the cost per issue of the publications. Vavilov also stated that one of the best methods for assuring the quality of manuscripts would be to make each individual author fully responsible for the scientific and ideological quality of his work.

The General Assembly approved the 1950 plan for the publication of 15,300 manuscript pages.

PLAN OF THE ACADEMY OF SCIENCES USSR ON THE INTRODUCTION OF COMPLETED SCIENTIFIC-RESEARCH PROJECTS INTO INDUSTRIAL PRACTICE

The following report was submitted by Academician Ye. A. Chudakov.

Two statements by Stalin are the basis for the great achievements realized by Soviet science. These are: "Not only to attain but to surpass the level of science in foreign countries" and "Soviet science does not hold itself aloof from the demands of the people. It is a science ever aware of the needs of the people." As a result, the Academy of Sciences USSR undertakes the study and solution of various important problems, and also provides for their rapid adoption by industry to serve the people as efficiently as possible.

It should be the aim of every scientist working at the Academy of Sciences to see that the results of his scientific endeavor can be rapidly adopted by industry.

- 6 -

SECRET

SECRET

SECRET

SECRET

50X1-HUM

Up to now, this aspect of the academy's work has been rather poorly emphasized; therefore, the 1950 plan calls for a system which will ensure rapid adoption of completed projects. Naturally, it is difficult to determine at any one time the particular state of completion of any project. For that purpose, the Presidium has developed a classification system which will permit better evaluation of the stage of completeness of projects prior to their introduction into industry:

1. In process of adoption.
2. In process of preparation prior to adoption in industry.
3. In process of testing or undergoing factory testing.
4. In preparation for testing or for factory testing.
5. In state of cooperative development with industrial and scientific agencies.
6. In preparation for cooperative development.
7. Notice of intention, by publication, to adopt into industry.

This system will permit greater control over the stage of completion of any project and should do much toward speeding up the program of adoption of completed scientific projects.

The departments of the Academy of Sciences got together and organized a Commission for the Preparation and Editing of the 1950 Plan, prior to the submission of the "Plan for the Introduction Into Industrial Practice of Completed Projects" to the Presidium, Academy of Sciences USSR. Academician I. I. Artobolevskiy (chairman), Academician S. I. Vol'fkovich, Corresponding Member of the Academy of Sciences B. M. Vul, Corresponding Member of the Academy of Sciences USSR A. L. Kursanov, and several others were appointed to this commission.

One of the first duties of the commission was to review plans for the "introduction into industrial practice" of projects of the various departments. Careful examination on the part of the commission prevented many serious errors.

The final first draft listed 545 projects which were ready to be introduced into industrial practice. Of the above number, 360 had to do with new technology, rationalization of industrial processes, and other matters bearing on the nation's economy. One hundred and eighty-five works are scheduled for possible "adoption" by industry or will be published to inform industry of their existence and their possible later "adoption." In this latter category, 103 projects belong to the social science departments.

At present, 56 projects are ready for adoption; of this number, Gostekhnika (State Committee for the Introduction of Advanced Techniques Into the National Economy) SSSR has urged immediate adoption of 48 projects. At this time, it is impossible to list all of the projects which are to be adopted; however, it is possible to give a general idea of the projects. For example, the Department of Physicomathematical Sciences has perfected new highly stable anisotropic and insulating materials, luminophors for luminescent tubes, barium titanites, technical and engineering fundamentals for the construction of stations in earthquake zones, and new industrial technology. In this latter category, there is the development by the Mathematics Institute imeni V. A. Steklov of a method for laying out patterns for steel bars and steel plates which will result in great savings of steel.

- 7 -

SECRET

SECRET

SECRET

SECRET

50X1-HUM

The Department of Chemical Sciences will work toward the adoption by industry of natural salts for national economical purposes, the production of tin from low-grade ores and tailings, etc. This department also has a whole series of projects: on the subject of heavy organic synthesis, the new combined generation of power and chemical production based on fuels, new methods for the prevention of corrosion, a new method for precise chemical analysis, and new methods and apparatus for the control of production operations which are ready for adoption by industry.

Department of Geological and Geographical Sciences will submit for general adoption new methods for surveying and discovering of petroleum, coal, bauxite, iron, nonferrous metals, and rare element deposits, as well as innovations in the field of construction and refractory materials.

Some of the work accomplished by the Council for the Study of Productive Forces of the USSR and the Soils Institute will permit expansion of agriculture in Kaliningrad Oblast, cotton growing in the Transcaucasus and Central Asia, as well as improvement of the water regime and general utilization of the Baradinsk depression in Siberia. A considerable contribution to the national economy was credited to the Institute of Permafrost Studies which suggested the laying of gas conduits in permafrost ground at a depth much less than heretofore recommended. The Laboratory on Hydrogeological Problems completed some useful projects relating to mineral and artesian waters and the Oceanological Institute has available several completed projects which should aid Soviet fisheries.

The Department of Technical Sciences is credited with projects: on thermal technology (binary boilers, flameless combustion, and power-chemical utilization of fuels), in the field of metallurgy (electrosmelting of titanium-magnesium ores), in the field of machine building (new method for conducting computations on machine parts and determination of their wear characteristics), automatization of projective processes (automatization of drilling operations), and general matters of regulation with respect to the intensification of mining processes, as well as new methods for dressing ores (flotation, etc.). Agencies of the department have also completed new types of computers.

The Department of Biological Sciences has several projects which are intended to increase harvest yields, improve animal husbandry, as well as improve the production of tea, vitamins, antibiotics, caoutchouc-bearing plants, and subtropical plants.

As stated previously, the Academy of Sciences has for the first time established a separate plan for the introduction of completed projects into industrial practice. The goals established by the plan are very high, but a review of the 1950 plan revealed certain important shortcomings. One of the greatest weaknesses of the plan is its lack of complete agreement between the scientific activities of the Academy of Sciences and corresponding institutes in ministries and industries, particularly with respect to the adoption of completed scientific projects by industrial agencies. Some of the institutes (outside of the Academy of Sciences) are working more or less independently of the requirements of party and state. Moreover, frequently there is not sufficient technical-economical control over projects which are scheduled for adoption by industry.

All of these shortcomings are to be eliminated before the approval of the final draft of the 1950 plan for the introduction of completed projects into industrial practice.

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- 8 -

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